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UNITED STATES NAVY

MEDICAL NEWS LETTER

Vol. 41 Friday, 1 February 1963 No. 3

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United States Navy

MEDICAL NEWS LETTER

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Policy

The U. S. Navy Medical News Letter is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be, nor are they, susceptible to use by any officer as a substitute for any item or article in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

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Change of Address

Please forward changes of address for the News Letter to: Commanding Officer, U. S. Naval Medical School, National Naval Medical Center, Bethesda 14, Md., giving full name, rank, corps, and old and new addresses.

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The issuance of this publication approved by the Secretary of the Navy on 28 June 1961.

First Aid and Treatment for Venomous Snake Bites

Prepared by the Preventive Medicine Division - BuMed

Several methods of treatment for snake bite have been recommended by experienced individuals. Since valid comparative data on the results of these various methods in man are not available, the first-aid treatment of a snake bite casualty by military personnel must be largely empirical. The following recommendations on first-aid and treatment of snake bite should be considered temporary pending development of improved methods from further research.

The number of venomous snake bite casualties has been very small in past military operational experience, so the problem is expected to remain one of morale rather than loss of manpower. Troop morale could be improved by providing information on the prevention of snake bite and rarity of fatality following snake bite. The effectiveness of antivenin therapy should be stressed. Increasing the inherent fear of snake bite by the educational program should be carefully avoided. This Bureau is preparing a manual of venomous snakes of the world which will indicate geographical distribution and habits of these snakes, together with identifying descriptions and photographs.

First Aid. First-aid treatment of snake bite comprises those measures taken by other than Medical Department personnel. The following first-aid procedures are recommended:

a. Immediate and absolute immobilization of the affected part in a dependent position.
b. In cases of envenomation of an extremity, place an improvised lightly constricting band or tourniquet 2 to 4 inches proximal to the site of the bite. Reapply the tourniquet proximally to the swelling as it progresses up the extremity. The band or tourniquet should be placed tightly enough to occlude the superficial venous and lymphatic return, but not tightly enough to occlude arterial flow.
c. In cases of respiratory failure following envenomation, prolonged mouth-to-mouth or mouth-to-nose artificial respiration should be employed.
d. Early assistance from the nearest medical source should be obtained. Transportation of the patient, preferably by litter, to a medical facility and a physician's care should be prompt.

Emergency Treatment by Hospital Corpsmen. Trained hospital corpsmen possess professional judgment commensurate with their training and experience. These persons are capable of instituting the above first-aid measures plus the following recommended procedures. These procedures should not be performed by hospital corpsmen unless the services of a physician are not immediately available. It is assumed that these procedures will not be used unless actual envenomation seems certain.

a. Incision and suction should be utilized immediately (within one hour) after the bite. Incisions not more than one-half inch in length should be

made through the skin at the site of the fang marks. The incisions must penetrate through the skin, but should not be deep enough to enter muscles or to injure underlying structures, such as tendons, blood vessels or nerves. Oral suction may be used if any other means of suction are not available. Incisions by untrained personnel may result in significant avoidable morbidity—or perhaps mortality.

b. In the absence of a physician and after suitable training, hospital corpsmen may administer antivenin after conducting sensitivity tests to horse serum. Antivenin should be given intramuscularly at a site elsewhere on the body as soon as possible after envenomation. Antivenin should not be added to the hospital corpsman's kit except as operational necessity dictates.

Treatment by the Physician. Every effort should be made to get the victim of a venomous snake bite under the care of a physician as soon as practicable. The details of the treatment of each individual case are best determined by the attending physician. The following outlines recommended therapeutic procedures:

a. Antivenin. Polyvalent or specific antivenins prepared from venomous snakes in the same geographic area should be administered in therapeutic quantity recommended by the manufacturer. Antivenin should be given intravenously during hospitalization provided that sensitivity tests indicate that the patient is not allergic to the antiserum to be used. Desensitization, if necessary, should precede the administra- of antivenin by any route.

b. Incision and Suction. Substantial amounts of venom can be removed during the first half hour from subcutaneous deposits by incision and suction. After one hour following envenomation, on the other hand, attempts to remove venom by incision and suction at the site of the bite would be of no value. However, if marked subcutaneous pitting edema develops, interstitial pressure can be relieved by several longitudinal incisions extending into the subcutaneous tissues. Suction and fasciotomy may be required at times.

c. Tourniquet. The prolonged use of a tourniquet would increase local tissue damage due to the action of the venom and might delay the vascular transport of antivenin into envenomated areas. A tourniquet applied following a bite by a venomous snake should be removed if envenomation seems mild or after a potent antivenin is given in therapeutic quantity.

d. Immobilization. During transportation and most of the early hospitalization period, immobilization of the affected part and absolute rest should be continued. The extremity should be immobilized in the position of function, and active and passive exercises to prevent contraction started after the third day if consistent with the patient's condition. A sedative or analgesic may be administered to relieve restlessness and anxiety; ice bags to alleviate severe pain should be applied only for a short time so as to prevent cold injury.

e. Antibiotics. A broad-spectrum antibiotic should be given promptly in appropriate dosage if the reaction to envenomation is severe. Since the nature of the injury markedly predisposes to infection, and pathogenic bacteria are found in the wound, this use of antibiotics seems justified. A massive wound infection with severe systemic reaction could be mistaken for severe envenomation.

f. Blood Transfusion. Blood transfusions may be necessary and at times have been followed by marked improvement. Studies of the several factors involved in blood clotting may be useful as guides to treatment. The first and subsequent specimens of urine should be examined for the presence of red blood cells, hemoglobin, and protein. Progressive decrease in the total volume of circulating red blood cells has been attributed to the development of massive hemolytic anemia or internal hemorrhage.

g. Tetanus Prophylaxis. A tetanus toxoid "booster" inoculation should administered upon admission.

h. Corticosteroids. The use of corticosteroids should be restricted to the prevention or treatment of late manifestations of allergy following the administration of antivenins.

i. Electrolyte Balance. Abnormalities of fluid and electrolyte balance should be detected and corrected on a continuing basis.

j. Respiratory Paralysis. If respiratory paralysis develops following envenomation, the use of tracheostomy and intermittent positive pressure artificial respiration is indicated.

k. Renal Shutdown. An awareness of this complication can do much toward the prevention and treatment of secondary effects arising after its occurrence. Routine daily tests such as B. U. N., CO_2 combining power, and serum potassium levels are indicated in severe cases of envenomation.

l. Unevaluated Therapeutic Measures. The following measures have not been adequately evaluated and are not generally recommended:

(1) Isolation-perfusion of an extremity with antivenin
(2) Local use of cold
(3) Exchange transfusion
(4) Early excision at the site of the bite

Sources of Antivenin. Antivenin may be obtained from the sources listed according to geographical area. The species whose venoms are neutralized are indicated.

Dosages recommended by various manufacturers range from one to five or more ampules as supplied. The amount of antivenin required depends on the amount of venom inoculated, and is determined by the clinical course in each case.

(Beginning on the following page there are listed producers or sources of antivenin, nomenclature, and species of venoms neutralized.)

Producer or Source	Nomenclature	Species - Venoms Neutralized
NORTH and SOUTH AMERICA		
Armed Forces Medical Supply	Antivenin Kit, Polyvalent, 1 dose FSN 6505-680-2987	Pit vipers, including rattlesnakes, cottonmouth, copperhead, fer-de-lance, and bushmaster
AFRICA		
South African Institute for Medical Research, Hospital Street, Johannesburg, Union of South Africa	Antisnake bite serum (Polyvalent)	All important venomous snakes of South Africa
Institut Pasteur d'Algerie Algiers, Algeria, and Paris, France	Serum Antivenimeux Antiviperin AN	Horned vipers and cobras of North Africa
Institut Pasteur, Paris	Serum Antivenimeux AO	Puff adder, Gaboon adder, and cobra species
Institut Pasteur, Paris	Serum Antivenimeux C	Cobras of Egypt, India, and Indo-China
Behringwerke Aktiensgesellschaft, Germany	Schlangenbiss-Serum Anti-Kobra Serum	Egyptian cobra, Naj. nivea (cobra), Ringhals, Spitting cobra, and other African species
Behringwerke Aktiensgesellschaft, Germany	Schlangenbiss-Serum (Puff-Otter Antiserum)	Puff adder
Behringwerke Aktiensgesellschaft, Germany	Schlangenbiss-Serum (Echis carinatus antiserum)	Carpet viper

(continued)

INDIA		
Haffkine Institute, Parel, Bombay	Polyvalent Anti-Snake Venom Serum	Indian cobra, Common Krait, Russell's viper, Carpet viper
Central Research Institute, Kasauli, India	Concentrated Anti-venom	Cobra, Russell's viper, and Echis
Behringwerke Aktiens-gesellschaft, Germany	Schlangenbiss-Serum (Vipera ruselli antiserum)	Russell's viper
Behringwerke Aktiens-gesellschaft, Germany	Schlangenbiss-Serum (Echis carinatus antiserum)	Carpet viper
INDONESIA		
Gedung Tjatjar Den Lembaga Pasteur (Pasteur Institute) Dj. Pasteur 9, Kotak Pos 47, Bandung, Indonesia	Polyvalent Antivenin	Pit viper (Agkistrodon rhodostoma), Indian Krait, Black cobra
THAILAND		
Queen Saovabha Memorial Institute of the Thai Red Cross, Bangkok	Polyvalent Antivenine	Cobras, true vipers, and pit vipers of Thailand
Queen Saovabha Memorial Institute of the Thai Red Cross, Bangkok	Cobra Antivenine	Indian Cobra, King cobra, and presumably the Krait
Queen Saovabha Memorial Institute of the Thai Red Cross, Bangkok	Viper Antivenine	Thai species of Russell's viper
Queen Saovabha Memorial Institute of the Thai Red Cross, Bangkok	Agkistrodon rhodostoma antivenine	The pit viper Agkistrodon rhodostoma
TAIWAN, FORMOSA		
Taiwan Serum Vaccine Laboratory, Shilin Taipei, Taiwan	Polyvalent Haemorrhagic Antivenin (continued)	Bamboo viper, Pit viper (Trimeresurus macrosquamatus)

JAPAN

Institute for Infectious Diseases, University of Tokyo, Shiba Shirodare-Daimache, Minato-Ku, Tokyo	Polyvalent Antivenin Serum	Habu, Mamushi

PHILIPPINES

Republic of Philippines Department of Health, Manila, P. I.	Philippine Cobra Antivenine	Philippine cobras only

AUSTRALIA

Commonwealth Serum Laboratories, Department of Health Melbourne	Tiger Snake Antivenine	Tiger snake, Death adder, Australian copperhead, Common Brown snake, Red-bellied Black snake, Taipan

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The Acute Burn - Pitfalls of Care*

Frank W. Masters MD, and David W. Robinson MD. GP XXVI:147-152, October 1962, published by the American Academy of General Practice.

Stimulated by the Cocoanut Grove disaster, World War II, and the Korean conflict, medical research has made remarkable progress in the management of acute burns. Based on an understanding of altered physiology, an almost standard therapeutic approach has been developed which has salvaged many patients during the shock phase of an acute burn. Formulas have also been devised as guides to essential fluid therapy but, unfortunately, the standardization of this therapy has tended to produce a "cookbook" approach to burn management that treats only one aspect of a multifaceted problem.

An extensive burn is a traumatic catastrophe that creates many physical, physiologic, psychologic, and financial difficulties. The solution of these problems is essential for total burn care and rehabilitation. Although individual aspects of burn therapy may be routinized, the over-all management of the burn

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problem is by no means standard. Undue emphasis has been placed upon the therapy of physiologic deficit; the treatment of the burn wound and the complications arising from faulty diagnosis have not received the careful attention they require.

Although there is a divergence of opinion regarding the management of these nonstandardized facets of the acute burn problem, there are a number of practical guideposts to general care that may help avoid many pitfalls that produce unnecessary complications and prolonged rehabilitation. These essential elements include: (1) careful initial evaluation combined with an accurate diagnosis, (2) adequate fluid therapy when needed, (3) logical management of the burn wound, and (4) the recognition and prophylaxis of complications. It is the purpose of the authors to review these general principles of burn care and to emphasize the common mistakes which tend to trap the unwary.

Initial Evaluation and Diagnosis

Professional objectivity is difficult to maintain when the physician first examines an extensive burn. Even the most objective observer is apt to be distracted by the pain, odor, and fear of the burned patient. The anxiety of the patient's distraught relatives and the physician's urgent desire to "do something" immediately, however, may lead to complications. Although sympathetic understanding is an absolute necessity, a critical routine must be developed which will allow total evaluation without distraction by a myriad of therapeutic detail. This first examination should include the diagnosis of the depth of burn, the evaluation of the extent of the injury and the careful observation of areas of critical importance before the physician is sidetracked by the technical problem of starting fluid therapy.

The Airway

When the patient is first seen, examination of the airway is of prime importance. Inhalation of hot gas, irritating smoke or flame can produce a rapidly developing, fatal laryngeal edema. Initial evaluation of the airway should include the nose and mouth for edema, dryness or vesiculation of the mucous membrane; the chest, for retraction and increasing respiratory effort, and the spoken voice. Hoarseness is an important sign. Auscultation of the lungs may be misleading. Rales or ronchi are not constant physical findings and are of little help in establishing the diagnosis of incipient airway obstruction. If necessary, elective tracheostomy should be performed during the early phases of respiratory difficulty. This obviates many possible complications which are more common when the procedure is done as an acute emergency.

History and Physical Examination

The initial critical evaluation of the burned patient must include the history of the type of burning agent, duration of exposure to heat, and a careful examination of the depth and extent of burn. Subsequent therapy depends upon the accuracy of this estimation of the extent and severity of burn. Visual examination of the affected area alone is not sufficient to accurately appraise

the depth of the burn, yet this is common. Sudden flash burns may appear deep due to their brown appearance but they usually are superficial. Long exposure at lower temperatures may produce a burn of surprising depth. Virtually all thermal burns present a confusing picture which leads to an inaccurate diagnosis if visual perception alone is trusted. Although burns are classified in degrees, the important factor from the therapeutic and prognostic viewpoint is whether the full thickness of the skin is affected.

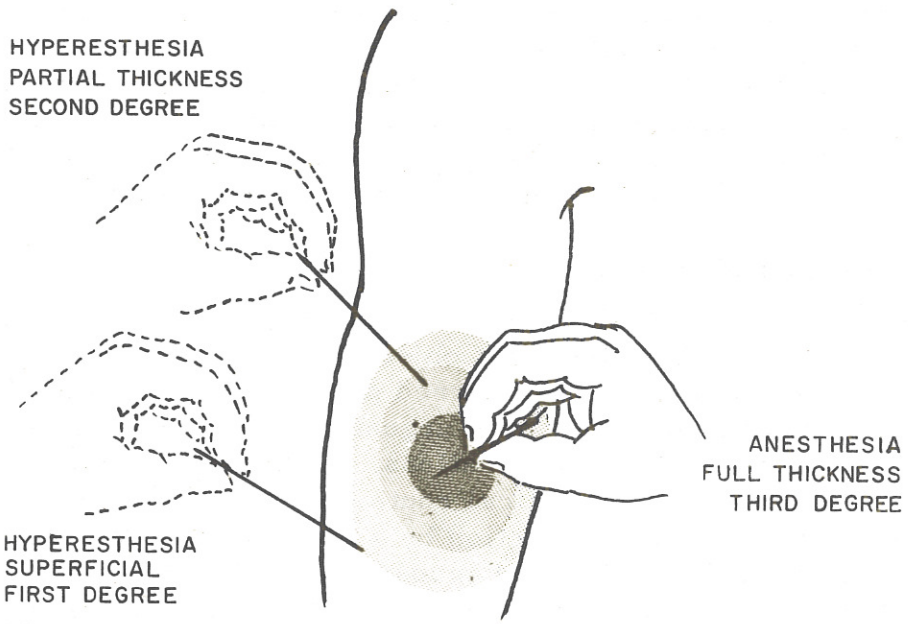

FIGURE I. Using a sterile needle to test sensation, the depth of an acute thermal burn can be accurately determined.

In addition to the typical clinical appearance of charring, or the so-called "ivory white" of full-thickness burns, the sensory evaluation of the burned area may yield important information. Areas of full-thickness skin loss show insensitivity to pinprick and loss of light touch (Figure 1). Under sterile conditions, areas of third-degree burn can be mapped out. What originally appeared to be an extensive burn often is less severe than suspected originally. Another useful clinical test is remains of hair in the burned area. If the hair can be lifted out with little resistance, causing little or no pain, the burn is a deep one.

The estimation of the extent of burn has been simplified by the use of the "Rule of Nines" (Figure 2). Although this formula serves as a good guidepost during the initial evaluation, two errors occur frequently. Overestimation of the area involved is the most common mistake. Since almost all subsequent fluid therapy depends upon the surface area involved, this general tendency to overestimation can produce overhydration with symptoms of water intoxication.

When dealing with the burned child, the "Rule of Nines" also leads to inaccuracy. Before the age of 5, the lower extremities of a child do not occupy the same relative surface areas as do the lower extremities of an

adult. Here again, the misapplication of this guide to surface area may lead to overhydration. When this guidepost to burn evaluation is properly used, it is an invaluable adjunct, but when misapplied or used carelessly, catastrophe can occur.

Fluid Therapy

Fluid replacement therapy based upon physiologic alterations has been virtually standardized. Formulas devised by Evans and modified by the Brooke Army Medical Center Unit have produced uniformly good results during the shock phase of burn management. These guides to therapy are predicated upon an accurate diagnosis of the depth and extent of the thermal injury. When properly used, these programs provide for accurate replacement of the colloid, electrolyte, and insensible water losses (Figure 3). As with all such standard formulas, there are inherent defects which tend to trap the unwary into a false sense of security.

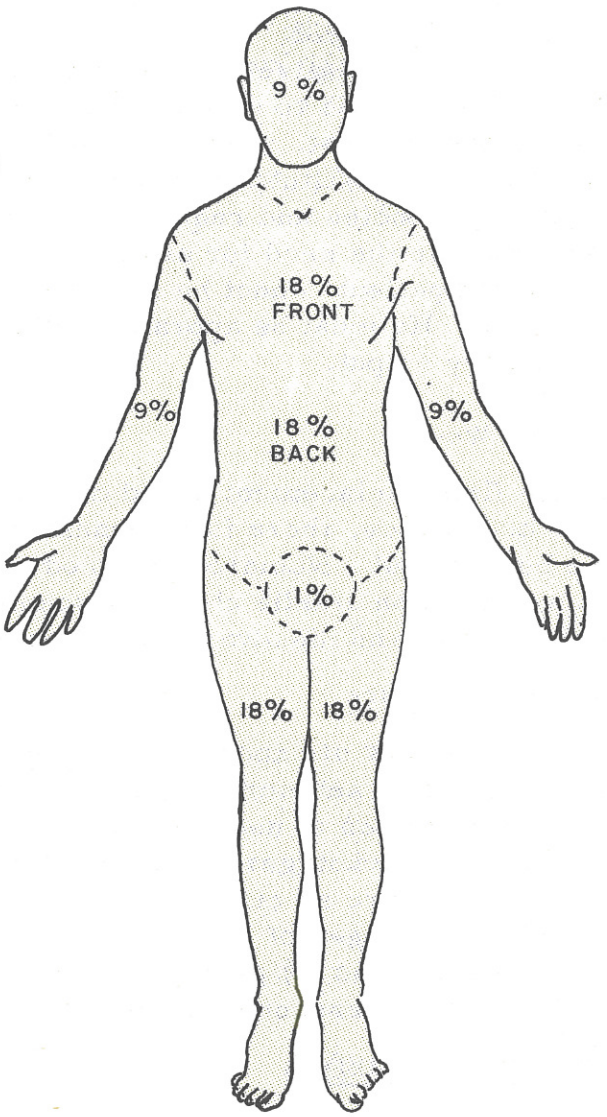

FIGURE 2. The "Rule of Nines" in this diagram demonstrates the divisions of body surface into percentage segments that are 9 per cent or multiples of nine.

Overhydration and Dehydration

Adequate hydration of the burned patient cannot be calculated on a formula basis only. If the extent and depth of the burn are overestimated, overhydration to the point of water intoxication can occur. An abnormal response to injury can produce an excessive fluid loss for which the standard guide will not compensate. The best and simplest method of determining adequacy of fluid therapy is the hourly urinary output. The hourly measurement of output will rapidly disclose the unexpected and highly individualized responses to injury which cannot be predicted or compensated for by standardized treatment. Fluid therapy should vary with urinary excretion in an effort to maintain the output at levels of 25 to 50 cc per hour for adults. Although the signs of water intoxication include pallor, restlessness, disorientation, and pulmonary edema, an increasing urinary output may predict overhydration before clinical signs are apparent.

Oliguria is significant and may represent either inadequate fluid replacement or incipient renal failure. The most frequent cause of a decreasing urinary flow during the first 48 hours after burn is dehydration. The diagnosis is confirmed by "water-load test," using 5% glucose in water as a testing agent. A liter of fluid is given rapidly and the response of urinary output is diagnostic.

Even the relatively standardized fluid therapy is fraught with complications if the guides to treatment become the sine qua non of therapy. All formulas are, at best, mere educated estimates of physiologic deficit and must not be substitutes for careful repeated clinical observation. Burns are real emergencies and require constant observation for changes in condition that indicate the need for alterations in replacement management. A severely burned patient cannot be seen late in the day and allowed to "ride" until morning. He must be appraised often, especially with regard to changes in urinary output.

The Burn Wound

Although fluid replacement based on extent and depth of burn has achieved widespread acceptance, there is no unanimity of opinion regarding the management of the burn wound. Numerous methods have been advocated, varying from complete exposure on sterile sheets to mummification in occlusive dressings. There are advantages and disadvantages to both.

Wound Exposure

The advantages of exposure of the wound are: (1) ease of mobilization, clinical evaluation and nursing care, (2) rapid stabilization of the burn wound, and (3) reduction of hospital cost.

The disadvantages of exposure include: (1) inherent difficulty in maintaining exposure as circular burns are virtually impossible to expose completely, (2) danger of external contamination entering through breaks in the wound crust, and (3) practical difficulties of maintaining flawless sterile technic by all personnel in contact with the burned patient.

Occlusive Dressings

Proponents of the occlusive dressing method of management claim: (1) better protection against externally introduced infection, (2) better immobilization to allow spontaneous healing of more superficial burns, (3) reduction of edema during the acute phase, and (4) more rapid sequestration of devitalized tissue.

Obvious disadvantages of this technic include: (1) total immobilization and mummification with its attendant heat entrapment and pulmonary complications, (2) discomfort associated with dressing change, (3) problems of nursing care and clinical evaluation of any patient swathed in bandages, and (4) increase in hospitalization cost. Although both methods have many adherents, a combination of approaches should be used to incorporate the advantages of both and to individualize care of the burn wound.

Burns of a superficial nature, treated on an outpatient basis, should be dressed to protect against sources of external infection. In contradistinction, extensive burns, particularly those involving the face or perineum which create difficult nursing care problems, should be exposed.

Most acute burns are more comfortable and easier to manage if exposed until sequestration of the burn slough occurs. If the crust that forms over

FLUID REPLACEMENT THERAPY

EVANS FORMULA

COLLOID:

1 cc. x wt. in kg. x per cent of BSB (Blood, Plasma, Plasma Expanders)

ELETROLYTE:

1 cc. x wt. in kg. x per cent of BSB (N.Saline + 1/6 N. Lactate, 3-1 Ratio)

GLUCOSE in H_2O (2,000 cc.):

Insensible Water Loss

BROOKE FORMULA

COLLOID:

1/2 cc. x wt. in kg. x per cent of BSB (Blood, Plasma, Plasma Expanders)

ELECTROLYTE:

1 1/2 cc. x wt. in kg. x per cent of BSB (Lactated Ringer's)

GLUCOSE in H_2O (2,000 cc.):

Insensible Water Loss

RATE OF ADMINISTRATION

First 8 Hours After Burn	*Second 8 Hours After Burn*	*Third 8 Hours After Burn*
1/2	1/4	1/4

FIGURE 3. The formulas for fluid replacement therapy derived by Evans and modified at the Brooke Army Medical Center, when properly used, accurately replace the physiologic deficit created by an acute burn. The body surface burn (BSB) should not exceed 50 per cent, however, when total fluid therapy is calculated.

an exposed burn cracks, the necessity for protection against external contamination demands dressing care. An exception to this concept of exposure exists with burns of the hands. These injuries require occlusive dressing to maintain the position of function. An extension deformity and loss of ultimate function will occur if the burned hand is allowed to remain at rest on a supporting pillow or at the patient's side.

Cleansing and Debridement

Another facet of the care of the burn wound too often neglected by unwarranted concentration upon the more standardized fluid therapy is the initial cleansing and débridement. The physician may be lulled into a false sense of security by the old adage that the burn is initially sterile and infection occurs from intervention. Unfortunately, cleansing may be inadequate when the physician, unwilling to inflict pain upon an anxious patient, devotes his primary attention to fluid and electrolyte balance.

Careful, gentle cleansing of the burned wound is an integral part of therapy. Bland detergent or warm water or saline will rid the surface of debris and devitalized tissue which are harbingers of infection. Vesicles should be débrided under sterile conditions to prevent maceration and promote spontaneous healing. Where possible, a routine should be developed for the management of the local burn that embodies the basic principles of wound care. These general principles should be tempered, however, by the functional needs of the specific region involved. There is no substitute for individualization of wound care.

Complications

The major complications of the acute burn, for example, shock, water intoxication, and renal failure, occur as a primary result of the extensiveness of the original injury, or they occur secondarily from inadequate diagnosis and faulty fluid therapy.

During this period, however, other major problems begin. These reach clinical importance only after reaction to the acute injury has subsided. It is essential that the physician be aware of the inevitability of other major difficulties so that prophylaxis can begin before the symptoms and signs of complications have reached clinical significance.

Infection

The most pressing problem today in the long-term management of the severe burn is infection. Uncontrollable sepsis is, at present, claiming more lives than irreversible shock and renal failure. Unfortunately, little is known about the physiologic mechanisms underlying this so-called "septic phase" of burns. Burn toxins, overwhelming bacterial invasion, and anaphylactoid responses to foreign protein have been postulated as possible etiologic agents.

Prophylaxis against the inevitable bacterial contamination should begin immediately. The severely burned individual should be isolated in as clean an atmosphere as possible and he should be maintained on broad-spectrum antibiotics from the beginning of hospitalization. The specific antibiotic therapy can be altered as the clinical course, cultures and sensitivity studies indicate the necessity for change. The erysipeloid or acute pyogenic type of streptococcic invasion which may occur during the first few days following the burning can be prevented by the use of penicillin.

Anemia

Anemia is another inevitable complication that results from local erythrocyte destruction, alteration of the normal red cell lifespan by heat and depression of the bone marrow. During the immediate postburn period, the laboratory findings, influenced by dehydration, often do not reveal the extent of red cell destruction. Hematocrit and hemoglobin do not begin to drop until the extracellular fluid volume is restored to normal. Even when the hematocrit is elevated, whole blood may be an integral part of the therapy to help combat the hidden anemia.

Nutrition

Nutritional deficiency also complicates burn therapy. Although the insidious effects of prolonged negative nitrogen balance upon general body economy and local wound healing are not manifest during the acute burn, anorexia, tissue destruction, and depletion of protein reserves start at the time of injury. These must be treated as soon as the burn patient can tolerate the necessary protein intake. Severely burned individuals literally eat themselves out of bed. The dietary regimen should consist of a high-protein, high-caloric diet with vitamin supplements. Protein intake should be pushed to the limit of tolerance. Diets containing as much as 3 to 4 Gm of protein per kg of body weight are needed. If anorexia precludes an adequate dietary intake, nasogastric feeding is an invaluable aid, particularly for the burned child who meets forced feeding with equally stubborn resistance.

MISCELLANY

U. S. Navy Medical Corps Programs for Medical School Students and Graduates

By LT C. B. Mohler MSC USN, Head, Procurement Section, Medical Corps Branch, Professional Division, BuMed.

The following list of medical schools is reprinted from U. S. Navy Recruiting Service Instruction 318. 2. Graduates of or students in those schools may apply for any Navy Medical Corps program for which they are otherwise qualified.

Since recruiting instructions have limited distribution, it is felt that a list of approved medical schools might be of interest to some individuals and/or commands outside the recruiting service. Many highly qualified physicians are practicing in the United States who are graduates of foreign medical schools which do not appear on the list. Some of this group are on active duty in the Navy Medical Corps. These doctors have demonstrated their proficiency in the profession of medicine through passing rigid state licensure examinations or by passing equally high standard and rigid American Medical Qualification Examinations administered by the Educational Council for Foreign Medical Graduates, 1710 Orrington Avenue, Evanston, Ill.

APPROVED MEDICAL SCHOOLS

1. United States

Medical College of Alabama	Birmingham, Ala.
University of Arkansas School of Medicine	Little Rock, Ark.
University of California School of Medicine	San Francisco, Calif.
University of California at Los Angeles	Los Angeles, Calif.
*Loma Linda University School of Medicine	Loma Linda, Calif.
**California College of Medicine	Los Angeles, Calif.
University of Southern California School of Medicine	Los Angeles, Calif.
Stanford University School of Medicine	San Francisco, Calif.
University of Colorado School of Medicine	Denver, Colo.
Yale University School of Medicine	New Haven, Conn.
Georgetown University School of Medicine	Washington, D. C.
George Washington University School of Medicine	Washington, D. C.
Howard University College of Medicine	Washington, D. C.
University of Miami School of Medicine	Coral Gables, Fla.
University of Florida School of Medicine	Gainesville, Fla.
Medical College of Georgia	Augusta, Ga.
Emory University School of Medicine	Emory University, Ga.
Chicago Medical School	Chicago, Ill.
Northwestern University Medical School	Chicago, Ill.
Stritch School of Medicine of Loyola University	Chicago, Ill.
University of Chicago School of Medicine	Chicago, Ill.
University of Illinois College of Medicine	Chicago, Ill.
Indiana University School of Medicine	Indianapolis, Ind.
State University of Iowa College of Medicine	Iowa City, Iowa
University of Kansas School of Medicine	Kansas City, Kans.
University of Louisville School of Medicine	Louisville, Ky.
Louisiana State University School of Medicine	New Orleans, La.
Tulane University of Louisiana School of Medicine	New Orleans, La.
Johns Hopkins University School of Medicine	Baltimore, Md.
University of Maryland School of Medicine and College of Physicians and Surgeons	Baltimore, Md.
Boston University School of Medicine	Boston, Mass.
Harvard Medical School	Boston, Mass.
Tufts College Medical School	Boston, Mass.
University of Michigan Medical School	Ann Arbor, Mich.
Wayne University College of Medicine	Detroit, Mich.
University of Minnesota Medical School	Minneapolis, Minn.
University of Mississippi School of Medicine	Jackson, Miss.
University of Missouri School of Medicine	Columbia, Mo.
St. Louis University School of Medicine	St. Louis, Mo.
Washington University School of Medicine	St. Louis, Mo.
Creighton University School of Medicine	Omaha, Nebr.
University of Nebraska College of Medicine	Omaha, Nebr.
Seton Hall College of Medicine	South Orange, N. J.
Albany Medical College	Albany, N. Y.
State University of New York College of Medicine at New York City	Brooklyn, N. Y.
University of Buffalo School of Medicine	Buffalo, N. Y.
Albert Einstein College of Medicine at Yeshiva University	New York, N. Y.
Columbia University College of Physicians and Surgeons	New York, N. Y.
Cornell University Medical College	New York, N. Y.
New York Medical College	New York, N. Y.
New York University College of Medicine	New York, N. Y.
University of Rochester School of Medicine and Dentistry	Rochester, N. Y.
State University of New York at Syracuse College of Medicine	Syracuse, N. Y.
Duke University School of Medicine	Durham, N. C.
Bowman Gray School of Medicine of Wake Forest College	Winston-Salem, N. C.
University of North Carolina School of Medicine	Chapel Hill, N. C.
University of Cincinnati College of Medicine	Cincinnati, Ohio
Western Reserve University School of Medicine	Cleveland, Ohio
Ohio State University College of Medicine	Columbus, Ohio
University of Oklahoma School of Medicine	Oklahoma City,Okla.
University of Oregon Medical School	Portland, Ore.
Hahnemann Medical College and Hospital of Philadelphia	Philadelphia, Pa.
Jefferson Medical College of Philadelphia	Philadelphia, Pa.
Temple University School of Medicine	Philadelphia, Pa.
University of Pennsylvania School of Medicine	Philadelphia, Pa.

1. United States (cont'd).

Woman's Medical College of Pennsylvania	Philadelphia, Pa.
University of Pittsburgh School of Medicine	Pittsburgh, Pa.
Medical College of South Carolina	Charleston, S. C.
University of Tennessee College of Medicine	Memphis, Tenn.
Meharry Medical College	Nashville, Tenn.
Vanderbilt University School of Medicine	Nashville, Tenn.
Southwestern Medical School of the University of Texas	Dallas, Tex.
University of Texas School of Medicine	Galveston, Tex.
Baylor University College of Medicine	Houston, Tex.
University of Utah School of Medicine	Salt Lake City, Utah
University of Vermont College of Medicine	Burlington, Vt.
University of Virginia School of Medicine	Charlottesville, Va.
Medical College of Virginia	Richmond, Va.
University of Washington School of Medicine	Seattle Wash.
University of Wisconsin Medical School	Madison, Wis.
Marquette University School of Medicine	Milwaukee, Wis.
W. Va. University School of Medicine	Morgantown, W. Va.

a. The following are approved schools of the basic medical sciences in the United States:

Dartmouth Medical School	Hanover, N. H.
University of North Dakota School of Medicine	Grand Forks, N. D.
University of South Dakota School of Medicine	Vermillion, S. D.

2. Puerto Rico

University of Puerto Rico School of Medicine	San Juan, P. R.

3. Canada

University of Alberta Faculty Of Medicine	Edmonton, Alberta
University of British Columbia Faculty of Medicine	Vancouver, B. C.
University of Manitoba Faculty of Medicine	Winnipeg, Manitoba
Dalhousie University Faculty of Medicine	Halifax, Nova Scotia
Queen's University Faculty of Medicine	Kingston, Ontario
University of Ottawa Faculty of Medicine	Ottawa, Ontario
University of Western Ontario Faculty of Medicine	London, Ontario
University of Toronto Faculty of Medicine	Toronto, Ontario
McGill University Faculty of Medicine	Montreal, Quebec
University of Montreal Faculty of Medicine	Montreal, Quebec
Laval University Faculty of Medicine	Quebec
University of Saskatchewan College of Medicine	Saskatoon, Saskatchewan

*Loma Linda University, School of Medicine, Loma Linda, California was formerly known as College of Medical Evangelists. Applicants who are graduates of that school known by the latter name may also apply for any program for which otherwise qualified.

**The California College of Medicine is accredited only for those graduates with the M. D. degree who were regularly enrolled in that school as of 15 February 1962 or subsequent thereto. Prospective applicants with M. D. degrees from that school who were not so regularly enrolled, may qualify for application for programs for which otherwise qualified on the same basis as graduates of non-approved (foreign) schools.

From: Recruiting Service Instruction 318.2, T. C. No. 6.

SUBMARINE MEDICINE SECTION

Revision of Psychiatric Standards for Submarine Duty

A revision of Article 15-29(2) (a), Manual of the Medical Department, which sets forth psychiatric standards for submarine duty has been processed through the Bureau of Medicine and Surgery, and submitted for clearance within the Department of the Navy. This revision will more effectively state the psychiatric qualifications for submarine personnel. The current psychiatric standards place undue emphasis upon positive motivation for submarine duty, and do not provide specific guidance with regard to other factors. Also, it came to the attention of the Bureau that at some Stations those individuals who are not considered to meet the psychiatric standards were found to be not physically qualified for submarine duty by reason of being "psychologically unadaptable." Such an entry in a man's health service record practically precluded him from ever again applying for submarine duty. The new psychiatric qualifications follow:

> (2) (a) Psychiatric. Because of the nature of the duties and responsibilities of each officer and man in a submarine, the psychological fitness of applicants for submarine training must be carefully appraised. This examination should be conducted by or under the direction of an officer trained in submarine medicine, psychiatry, or clinical psychology. The objective is to elicit evidence of tendencies which mitigate against satisfactory adjustment to submarine life. Among these are below average intelligence, claustrophobic tendencies, unhealthy motivations, history of past personal ineffectiveness, difficulties in interpersonal relations, and lack of adaptability. Since an individual's adjustment potential might change with time in the service, a finding of limited submarine adaptability at the time of one examination shall not in and of itself be cause for disqualification on a subsequent examination. This portion of the examination may be omitted at the time of the preliminary examination referred to above if the services of a trained individual are not available. If the psychiatric examination has been omitted, this fact shall be noted in the health record.

The following unique features of this revision should be noted:

a. In the future, the psychiatric examination should either be conducted by an individual fully qualified to do so or shall be omitted.
b. More specific guidance is provided concerning tendencies which might preclude satisfactory adjustment to submarine life.

c. If an individual is considered not to meet these qualifications, he should be found not physically qualified by reason of "limited submarine adaptability."
d. An individual who has been found not physically qualified at the time of one examination might be found physically qualified on a subsequent examination.

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FROM THE NOTE BOOK

Residency Training Requests Still Desired

To complete the Fiscal Year 1963 selection of residents to begin training in July 1963, requests are desired for residency training in the specialties of Anesthesiology and Plastic Surgery.

The Anesthesiology program consists of two years' training and openings are available at the U. S. Naval Hospitals, Chelsea, Mass., and St. Albans, N. Y. The Plastic Surgery program also consists of two years of training. The first year is given at the U. S. Naval Hospital, National Naval Medical Center, Bethesda, Md., followed by a year at Georgetown University Hospital, Washington, D. C., under an affiliated program with that institution.

Requests should be submitted to reach the Bureau within 30 days of the date of this Medical News Letter. Preference of hospital assignment may be indicated in requests for Anesthesiology only. Service agreements and other provisions of BUMED INSTRUCTION 1520. 10B should be followed with the exception of the date of submission of applications which is modified as stated above.—Training Branch, Professional Division, BuMed.

Airlift to Meeting of American College of Physicians, Denver, 1 - 5 Apr 1963.

A special airlift has been tentatively scheduled to accommodate medical officers of the Armed Forces who desire to attend the Annual Meeting, American College of Physicians. This airlift has been tentatively scheduled to depart from Andrews Air Force Base, Washington, D. C., at 0900, Sunday, 31 March 1963, and return to Washington on Saturday, 6 April, departing from Denver at 0900. Stopover will be made at U. S. Naval Air Station, Glenview, Ill., for passengers. Reservations for the plane should be made with the office of the Director, Professional Division, BuMed, by letter or telephone (OX 6-1280 or 6-1834). Requesting officers will receive confirmation of their reservations.

It is anticipated that an airlift from the West Coast will be planned to accommodate medical officers wishing to attend the meeting from West Coast activities. Information on the West Coast flight may be obtained by contacting CAPT George Tarr MC USN, Chief of Medicine, U. S. Naval Hospital, San Diego, Calif.

(continued)

Reservations should be requested only after due consideration by the officer or officers concerned, as cancellation at a later date does not allow the Bureau to contact alternates who may be vitally interested in acquiring a seat on the plane. In addition, scheduling of such flights is for the benefit of medical officers, and to obtain future airlifts of this nature, it is necessary for this office to comply with the requirements of the Chief of Naval Operations and not submit late changes to the manifest.

The number of TAD orders issued will be limited and commensurate with the funds allotted for this purpose. The Bureau has no objection, however, to the issuance of authorization orders to those officers who desire to attend this meeting and for whom the Bureau cannot provide TAD orders.

—Medicine Branch, Professional Division, BuMed

CAPT Floyd (MSC) Elected to Membership in International Group. At the recent meetings of the Eighth International Congress for Microbiology in Montreal, CAPT Thomas M. Floyd MSC USN was elected to membership on the International Enterobacteriaceae Subcommittee. CAPT Floyd has been Chairman of the Enterobacteriaceae Subcommittee of the American Society for Microbiology for the past two years and is a member of the Taxonomy Committee of this society. He has recently begun a tour of duty as Microbiologist and Head of the Laboratory Department of Preventive Medicine Unit No. 6, Pearl Harbor. (Reported by CAPT W. F. Lyons MC USN, Officer in Charge, Preventive Medicine Unit No. 6)

CDR Bird to Visit in India. CDR E. W. Bird MC USN has been named Chief of the U. S. Delegation being sent to India for the presentation of scientific and medical films in the cities of New Delhi, Madras, Bombay, and Calcutta. In addition to being Chief of the Delegation, Dr. Bird is also head of the section on medical films. The purpose of the film showings is to demonstrate the unique capability of scientific films for use in medical and scientific education. Navy medical films being featured are: Emergency Childbirth, Oral Hygiene, Making and Staining Blood Smears, Medical Aspects of Diving, and Endodontics-Bio-Mechanical Preparation of the Root Canal.

The two additional members of the U. S. Delegation are Dr. R. Boolootian, University of California Los Angeles, and Dr. W. Auffenberg, University of Colorado. The film presentation is under the sponsorship of the United States Information Agency and is being coordinated by the American Scientific Film Association.

New Films on Vision in Military Aviation

Flying modern military aircraft demands maximum perception by all of the pilot's senses, especially vision; and as the conditions of flying become more complex, it becomes more important for the pilot to understand how to get the most out of his sense of sight. As an aid to this understanding, a series of films is being produced for the Medical Department under the main title,

Vision in Military Aviation (MN-9480). The first of the series titled, Sense of Sight (MN-9480-a), was recently released. This 25-minute color film shows how the eye performs its three basic functions of light discrimination, visual acuity, and spatial discrimination; how the special conditions of military flying affect visual efficiency; and what the pilot can do to get the best performance from his sense of sight.

The picture explains the anatomy and physiology of the eye in order to make clear how the eye performs the three tasks mentioned. The description is simple but vivid, the purpose being to offer practical realistic information to help the pilot do his job. By a graphic combination of live action and animation, the picture demonstrates rod vision and cone vision, emphasizes the necessity for dark-adaptation, and offers technics for maintaining adaptation when relying on rod vision. The film explains how positive and negative "G", alcohol, carbon monoxide, medications, hypoxia, and overexposure to glare affect visual efficiency. It closes with a short summary of the principal points made.

Distribution of prints of Sense of Sight has been made to medical activities at Naval Air Stations, to Naval Hospitals, Aviation Libraries and Training Aids Sections and Libraries. If you do not receive a print from your regular source, address inquiry to the Commanding Officer, U.S. Naval Photographic Center, Naval Station, Anacostia, Washington, D.C., Atten: Film Distribution.

—Audio-Visual Training Section, BuMed, and Medical Film Office, U.S. Naval Medical School

Naval Medical Research Reports

U.S. Naval Medical Research Institute, NNMC, Bethesda, Md.

1. Effect of Dietary Phosphate Supplements on Dental Caries in the Rat: MR 005.12-5000.01 Report No. 10, December 1961.
2. Current Voltage Relations in the Lobster Giant Axon Membrane under Voltage Clamp Conditions: MR 005.08-0020.02 Report No. 3, July 1962.
3. Cariostatic Effect of Dietary Phosphate in the Rat in the presence or Absence of Fluoride in the Drinking Water: MR 005.12-5000.01 Report No. 11, September - October 1962.
4. Membrane Potentials of the Lobster Giant Axon Obtained by Use of the Sucrose-Gap Technique: MR 005.08-0020.02 Report No. 2, July 1962.

U.S. Naval Medical Research Unit No. 3, Cairo, Egypt.

1. Natural and Experimental Infection of Egyptian Equines with West Nile Virus: MR 005.09-1202.6.01, November 1962.

U.S. Naval Medical Field Research Laboratory, Camp Lejeune, N.C.

1. Effects of Wearing Body Armor of Different Designs, Materials, and Weights on the Performance of the Marine: MR 005.12-7010.1.14, November 1962.
2. Role of the Substrate Moisture Content in the Selection of Oviposition Sites by Aedes Taeniorhynchus (WIED.) and A. Sollicitans (WALK.): MR 005.09-0010.1.11, November 1962.

DENTAL SECTION

Diseases of the Eyes Caused by the Upper Lateral Incisor

J. L. Dephilippe, 22 Rue Michel-du-Crest, Geneva, Switzerland. Accidents oculaires causes par l'incisive lateral superieure. Med Hyg (Geneve) 20:441 May 23, 1962. Dental Abstracts 7(11):664, November 1962.

The upper lateral incisor plays an important role as the cause of certain diseases. The most frequent of these are those that involve the eyes. The peculiar anatomic relation of this tooth with the embryonic division of the dental lamina, which appears at about the second month of life, explains the severity and complexity of the complications.

Four patients are described who had mild to severe visual disturbances associated with inflammation of the eyes. Dental roentgenograms revealed in all 4 patients small apical foci of infection and incomplete obliteration of the root canal in either the left or right upper lateral incisor. The usual root canal treatment followed by obliteration of the entire root canal resulted in the immediate improvement of ocular symptoms and restoration of visual acuity in all 4 patients.

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Critical Assessment of Mouthwash

Theodore Berland, 535 North Dearborn Street, Chicago 10, Ill. What's the truth about 'mouthwash magic'? Today's Health 40:22, 72-74, June 1962. Dental Abstracts 7(11):648-649, November 1962.

Last year, Americans swished and gargled almost 76 million dollars worth of mouthwash to get rid of bad breath and relieve sore throats. Over 12 million dollars worth of lozenges and troches were purchased for the same purpose.

Despite the magical claims made for these oral panaceas, the almost 90 million dollars spent for throat and mouth nostrums is a waste of money. Any slight benefits derived could be had with ordinary warm tap water.

The word "astringent" on the label of a mouthwash bottle means, literally, that the wash contains a chemical (usually zinc chloride) that can shrink the tissues of the mouth. Dentists and physicians sometimes use astringents to close small wounds. If the user has no such wounds (chances are

that he hasn't), the astringent will make his mouth feel a little cleaner anyway. Although little is claimed for astringent mouthwashes, they do little. In that regard, their claims are far more honest than those for mouthwashes purported to be big germ killers.

The Council on Dental Therapeutics of the American Dental Association, which has kept close tabs on the subject for years, states that "mouthwash" is a loose term that generally means "a liquid with a pleasant taste and odor, used to rinse the mouth. Unfortunately, advertisers have attempted to imply wider uses. Many are labeled with noninformative or therapeutically suggestive names, or a name based on that of some outstanding person in medicine."

Many "germicidal" mouthwashes pass the laboratory tests. However, as a Temple University dentist, S. Leonard Rosenthal, has pointed out: "The bacteriologic report of the manufacturer is not pertinent to the treatment of oral disease. Few of his test organisms are likely to be found in the mouth more than occasionally, and the majority are not pathogenic to man. Nor is the method of testing comparable to clinical conditions.

"The manufacturer claims a reduction in the number of oral bacteria after the use of his product. There is no doubt of the truth of this assertion. It has been known for years that a vigorous rinsing with tap water or the proper use of a toothbrush will reduce the number of oral bacteria. Even smoking a cigarette will reduce the bacterial count 50% temporarily."

The Council on Dental Therapeutics reports: "The use of such terms as 'germicide,' 'antiseptic,' and disinfectant' in advertising mouthwashes is definitely misleading." Although germicidal activity can be demonstrated for many mouthwashes, proof of a clinical benefit from the use of germicidal mouthwashes is lacking.

Even if mouthwashes did contain efficient, useful germ killers that swept away every microorganism in the mouth, their effect would be very temporary. After a few breaths of the dust-filled and germ-filled air which we all breathe, one's mouth again would be teeming with bacteria.

Even "clean," healthy mouths may contain a bacterial flora more than 1,000 times that of the hands and arms.

Nor can a mouthwash "stop throat pain fast." Even if the user gargles for 5 minutes, the best a mouthwash can do is to reach the back of the mouth and perhaps a bit of the throat. Yet the infection is back beyond that in the pharynx and nasopharynx, and the organisms that cause the infection are deep within the tissues.

A sore throat that lasts more than 2 days and which is accompanied by fever, could well be a symptom of infection elsewhere, or of measles or diphtheria, or denote the presence of streptococcus. Instead of reaching for the mouthwash bottle, the person would do better to reach for the phone to call his physician. Any sore throat is a potentially dangerous condition.

As for claims that a mouthwash can "cure bad breath," bad breath is a symptom and not a clinical entity. Its causes are many. A major cause is poor oral hygiene. Other causes are dental caries, inflamed gingiva, improperly cleaned dentures, heavy smoking, sinus infections, and postnasal drip.

Physicians look for breath odors as a symptom of such conditions as scarlet fever, typhoid fever, diabetes, uremia, and esophageal diverticulum (where an abnormal sac is apt to form in the gullet).

The distinctive odors on the breath from garlic and onions do not come from any bits of food left in the mouth, but from the pungent chemicals in these bulbs that during digestion are absorbed by the intestines and carried by the blood to the lungs, where they are added to exhaled air.

The best way to rid your mouth of food particles that decay is to brush your teeth regularly after every meal. Proper use of dental floss helps. So does swishing some water around in your mouth and between your teeth. The main benefit of any commercial mouthwash, according to the Council on Dental Therapeutics, is "as an aid in the removal of loose food and debris."

Last year, Americans spent 64 million dollars on toothbrushes, 11 million dollars less than for mouthwashes. This is ironic, since increased toothbrushing would help bad breath worriers far more than any mouthwash.

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Personnel and Professional Notes

Residency in Oral Medicine. The U. S. Naval Dental School will establish a residency in Oral Medicine to commence early in Fiscal Year 1964. The course will be of approximately one year's duration and will provide instruction in oral medicine, oral diagnosis, roentgenographic interpretation, and treatment planning.

The Dental Training Committee will meet to review applications early in March 1963. Interested dental officers should submit their applications in accordance with Article 6-130, Manual of the Medical Department, to arrive in the Bureau at the earliest practicable date.

U. S. Navy Dental Corps Continuing Training Program. The U. S. Naval Dental Corps is offering a series of short postgraduate courses conducted by members of the staff of the U. S. Naval Dental School, NNMC, Bethesda, Md.

Among the courses to be offered is Oral Roentgenology. The date of the course is 1-5 April 1963. This course places emphasis on various types and models of x-ray equipment and on the techniques used in intraoral and extraoral roentgenology. Film emulsions and their processing are discussed. Specific attention is given to safety for both operator and patient. Adequate time is devoted to the reading and interpretation of films. The course consists of lectures, demonstrations, and clinical and laboratory exercises. Instruction in cephalometric analysis is also given.

The instructor will be Capt A. W. Grant, DC, USN. Quotas have been assigned to ComThree, ComNine, COMSRNC, and CNATRA.

This short course is open to active duty career dental officers of the Armed Forces in accordance with quotas established by the Bureau of Medicine and Surgery. Applications should be received in the Bureau as early as

possible and preferably, not less than 4 weeks prior to commencement of the course. The Bureau Professional Advisory Board will make recommendations on all requests, and upon approval by the Surgeon General, applicants will be notified as to the final action. Those approved will be nominated for TAD or authorization orders, as appropriate. Accounting data will be forwarded to individual officers nominated for TAD orders. Staff Dental Officers not utilizing assigned quotas should report this information to BUMED, Code 6111, one month prior to the convening date of the course. This will allow the Bureau to fill the quota from other districts.

Revised Initial Outfitting Lists. Cog "L" Material, Authorized Dental Allowance, dated December 1962, have been mailed to all Fleet, Force and Type Commanders and the Commanding Officer of all vessels having a Dental Department.

Listing of Newly Standardized Items Available for Issue.

FSN	Nomenclature	Unit Issue	Price
6520-817-2529	Forceps, Casting Removing, Dental, 6-1/2 inch	Ea	2.35
6520-823-8173	Bur, Dental, Excavating, AHP, Tungsten Carbide, No. 6, 6's	Pkg	2.60
6532-717-2325	Smock, Man's, Large (Item has been transferred from Cog "D" to Cog "L")	Ea	2.05

AFIP to Present Postgraduate Course. The Armed Forces Institute of Pathology will present the tenth annual postgraduate course, "Pathology of the Oral Regions," March 25-29, 1963, in Washington, D. C.

This year's course will emphasize the correlation of clinical and morphologic pathology as a means to greater understanding of the pathogenesis and semiology of disease. The faculty will consist of outstanding teachers from military and civilian institutions. Among featured lecturers will be Richard W. Tiecke of Northwestern University and Charles A. Waldron from Emory University. There are no fees for this 5-day course.

Quotas have been established for both civilian and military personnel. Naval Dental Officers who wish to attend under authorization orders should apply through appropriate military channels to BUMED (Code 6111). Civilians interested in enrolling in the course may apply to the Director, Armed Forces Institute of Pathology, Washington 25, D. C. Applications should be submitted as early as possible.

Advanced Dental Technicians Graduate. Certificates for successful completion of advanced and specialized courses of instruction were presented to 30 dental technicians and 1 special student at graduation exercises held on 14 December 1962, at the U. S. Naval Dental School, NNMC, Bethesda, Md.

A special certificate was presented to Lt Bhusani Nathalang (W), Royal Thai Navy, who completed the advanced course for general dental technicians and monitored other courses for dental officers and technicians during a six-months period.

"Choose Your Stripes" was the theme of an address to the graduates by Capt William A. Smith, DC, USN, Commanding Officer, U. S. Naval Dental Clinic, Philadelphia, Pa.

Capt A. R. Frechette, DC, USN, Commanding Officer of the Dental School, presented letters of commendation to the students having the highest averages in their respective fields of dental technology: Leslie T. Foskey, DT1, Advanced General; Robert L. Springfield, DT1, Advanced Prosthetic.

Jessie L. Johnson, DTCA, received the sixth Thomas Andrew Christensen, Jr. Award in recognition of his excellent service record and service reputation. The award, which was established by the Naval Dental School to honor the only naval dentalman presented the Navy Cross posthumously for extraordinary heroism, is awarded from time to time to an outstanding graduate of an enlisted course of instruction.

Capt M. G. Turner, DC, USN, Executive Officer, assisted by Capt W. A. Newman, DC, USN, Head of Enlisted Education and Training Department, awarded certificates to 20 graduates of the Advanced General Technicians School, 10 of the Advanced Prosthetic Technicians School, and one special student.

Capt D'Vincent and Lt White Present Course. Capt R. C. D'Vincent, DC, USN, and Lt D. R. White, DC, USNR, presented a course entitled "Dental Operating Room Efficiency in the Navy." The course was designed to acquaint Navy Dental Officers with the principles of time and motion economy in treating patients. It stressed the value of remaining imaginative in this field and sets forth suggestions for operative procedures and room arrangements when practicing with traditional equipment. While retaining the present high qualities of the profession, emphasis is placed on a reduction in fatiguing factors for both the dentist and his assistant while increasing the productivity of the operating team. The course makes no attempt to interfere with the technical details of restorative procedures which may vary from one dentist to another.

9th ND Reserve Training Seminar. On 12 Dec 1962, approximately 90 inactive Naval Reserve Dental Officers attended an all day reserve training seminar held at the Headquarters, Ninth ND, Great Lakes, Illinois.

Among those appearing at the seminar were:

Capt J. F. Link, DC, USN; Capt W. J. Hedman, Jr., DC, USN; Capt W. E. Ludwick, DC, USN; Capt W. I. Gullett, DC, USN; Capt E. A. Archer, DC, USNR; and LCdr L. V. Hickey, DC, USN

Capt F. M. Kyes, Director, Dental Activities, Ninth Naval District, coordinated the seminar.

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OCCUPATIONAL MEDICINE

Death in a Hole

Occupational Health Newsletter, by the Department of Preventive Medicine and School of Medicine, E 314 Health Sciences Building, University of Washington, Seattle, Washington, 11(10), October 1962.

"Mysterious Pit Death Under Probe," stated the headlines in a local newspaper. To those familiar with such experiences, the fatality was no great mystery. Barring a fall or a heart attack, death was more than likely due to lack of the one essential atmospheric element necessary to sustain life—oxygen.

During the past few years, staff members of the Environmental Research Laboratory have investigated a number of incidents, including the above mentioned, of dangers experienced by persons working in underground enclosures and excavations. Two cases resulted in fatalities. One involved a University of Washington professor and the other a bricklayer. The deaths, while tragic, are all too common and reflect the lack of safety practices. The uniqueness of these experiences concerns the location and circumstances surrounding these incidents, not the final outcome. It is also worth mentioning that almost without exception these and other similar fatalities have been and will be a needless taking of life; the "disease," oxygen deficiency, is fatal; prevention is simple. By following a few precautions before entering any underground enclosure, one can work in such environments with relative safety.

The following summarizes three cases investigated by the Environmental Research Laboratory:

Case I.

According to the newspaper report, the deceased, a soils expert and university professor, had been summoned to the high school to investigate soil pipe drainage problems in order to settle a dispute among contractors. Police said the pit near the outlet to one of the boy's shower rooms had been the scene of continuing drainage problems which had not been solved. School officials and contractors saw the deceased beginning his survey above the pit at 1:15 p. m. He was standing near the opening of an L-shaped trench. No one

saw him fall or enter to take samples and it was not until 2:00 p. m. that one of those working at the new school plant noticed the prone figure at the bottom. Police and fire department rigs and rescue workers were rushed to the school, but because of the small opening of the pit had considerable trouble reaching the victim. An autopsy report was inconclusive, indicating death could have been from the victim's lack of oxygen either after a fall into the pit or from the shock of the fall or from a rock rolling down from the excavated earth above.

A preliminary investigation indicated that death was probably due to oxygen deficiency, not because of an injury but rather because of a lack of oxygen in the pit atmosphere. The level of oxygen was approximately seven percent at the bottom of the pit. Additional surveillance, utilizing a combustible gas meter, indicated the presence of flammable gas or gases in excess of the lower explosive limit. (LEL)

The investigation was continued the next morning to ascertain the identity, the extent, and the source of the hazardous gases. The atmosphere was examined at a depth of four and one-half feet below floor level (pit had been refilled to that depth during the night). Concentrations approximating 30% methane, 30% carbon dioxide and 9% oxygen were found. No atmospheric abnormalities were noted in any other sections of the shower room. It was therefore speculated that the carbon dioxide increased the specific gravity of the gas mixture to where it was above that of air, preventing the escape of the highly explosive methane above ground.

In the meantime a perforated pipe was driven down to the depth of the excavation at the time of the fatality and an air sample was withdrawn resulting in concentrations similar to those mentioned above. Even though there were no natural gas lines servicing this particular building, gas fuel lines to other areas were examined for leaks. No leaks were discernible. An examination of the terrain adjacent to the shower room indicated that the foundation of the building rested on approximately 12 feet of fill which in turn rested on a peat formation, a type of soil characterized by partially decomposed vegetable matter. It was therefore surmised that the exploratory pit had been dug down far enough to penetrate the gas-laden peat layer and that the air in the excavation had been displaced by the "marsh gas," producing an oxygen deficient atmosphere.

Case II.

An emergency investigation was conducted as the result of the discovery of a fatality in a water system control valve manhole. According to information obtained at the scene, the deceased had been removed from the manhole (10 feet deep) at about 11:15 a. m., and was pronounced dead some thirty minutes later. Witnesses had noticed the victim entering the manhole at 8:30 a. m. Sometime between the hours of his entry and the discovery of his body, the manhole cover had been replaced. This structure had been completed by the deceased 6 weeks previous to his demise and he apparently had entered to make a final inspection.

An hour after the discovery of the body, the atmosphere in the manhole was examined, utilizing an explosive meter and an oxygen deficiency meter, resulting in readings of 15% of the lower explosive limit and normal oxygen levels. Since the manhole had been left open, it was decided to return at a later date to allow the manhole atmosphere sufficient time to stabilize. Five days later the oxygen level in the manhole was 9%, and the explosive level was 20% of LEL. The next day a sample was collected and examined, utilizing the mass spectrograph. These results indicated 3% methane, 4% carbon dioxide, and a very low oxygen content. In the meantime an autopsy was performed; the verdict, asphyxia with bilateral atelectasis.

Efforts to trace the source of the incoming gases proved inconclusive.

Case III.

A visit was made to a local warehouse to investigate atmospheric conditions in an irrigation system control valve manhole. On the previous day a worker had entered the manhole to close the valve. In the process he felt weak and had become dizzy, but was fortunately able to step up on a pipe and by so doing place his head in fresh air. He then informed the foreman of his experience, who in turn requested the services of the Safety Division.

On the day of the visit the oxygen content at the bottom of the manhole was approximately 12%. The presence of methane was also indicated. In a discussion relating to the general area, it was learned that the warehouse and surrounding buildings were constructed on a former garbage dump. This of course accounted for the presence of methane and the lack of oxygen in the manhole.

As a safety measure, the control valve stem was extended to a few inches below the ground level and warning signs were conspicuously posted.

Oxygen deficiency can occur in any confined space, particularly if located under ground and in the vicinity of decaying organic matter. Oxygen is most vital to life. According to Hendersen and Haggard, "Noxious Gases," when oxygen is diminished to values between 10 and 6%, the victim loses the ability to perform any muscular movements or to move at all. Bewilderment and loss of consciousness follow either with a fainting or a rigid, glassy-eyed coma. Up to this stage, or even in it, he may be wholly unaware that anything is wrong. Then his legs give way, leaving him unable to stand, walk, or even crawl. This is often the first and only warning and it comes too late.

In view of the potential hazards involved, there are a number of precautions that should be followed before entering an underground chamber or excavation. These precautions include:

1. At least 2 men should be present at all times with one man serving as an observer. The person entering the chamber should be equipped with a suitable lifeline attached to the observer.

2. The chamber or manhole should be ventilated utilizing a portable air blower. The air should be introduced at the bottom of the chamber. Ventilation should be provided for at least 10 minutes before entry (maybe longer for large chambers).

3. Readings should be taken with an explosive gas meter. Any appreciable deflection of the needle should be considered as potentially hazardous and the ventilation continued until the deflection is negligible before entry is permitted.

4. Ventilation should be continued as long as workers are in the chamber.

While good safety practice requires adherence to all of the above procedures, those relating to adequate and continuous ventilation are by far the most important and the ones we can least do without.

One never really knows what to expect when entering an excavation, manhole, or service tunnel unless the atmosphere has been adequately tested for the presence of possible contaminants and oxygen deficiency immediately prior to entry. For example an hour before the professor entered to collect his soil sample, a workman had been in the hole for some time removing dirt. The fatality in the water control valve manhole had occurred to the same worker who had previously spent a considerable time in the hole constructing the enclosure. Incidentally, that manhole was located at the top of a hill at least two hundred feet above and half a mile away from any swampy ground. A similar manhole adjacent to the swamp indicated the presence of normal oxygen levels. Trouble would normally be expected in the latter manhole rather than in the one at the crest of the hill.

The price of safety is continued vigilance and observance of good safety practices. It is important to remember that you cannot tell a harmless hole from a death-dealing one by looking at it.

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Medical Aspects of Large Scale Storable Propellant Operations

Anthony A. Thomas, M. D., 6570th Aerospace Medical Research Laboratories, Wright-Patterson Air Force Base, Ohio; "Industrial Medicine and Surgery," 400 S. W. 69th Avenue, Miami 44, Florida, XXXI (10): 433-437, October 1962.

Rapid advances in propellant development have brought about the second generation of ballistic missiles and boosters, characterized by increased range, quick reaction capability, and minimum vulnerability. To achieve these objectives, it was necessary to develop new propellants that possess higher energy and therefore provide more boost, that do not require tedious cryogenic handling techniques, and that can be stored within the missile for long periods of time without deterioration and the need for frequent refueling. Only by meeting these criteria is it feasible to optimize the concepts of hardened site and operational readiness.

There are a number of liquid and solid propellants that fulfill these requirements. The term "propellant" is used in a collective sense; it includes

the fuel and oxidizer in a liquid system, and fuel, oxidizer, plasticizer, binder, and other additives in a solid system. This paper will deal mainly with the liquids, because they create more medical problems in their handling due to substantial vapor pressure. The health hazards of solid propellants present fewer problems but are connected with accidental ignition, test firing, and mixing operations.

Some of our present day storable liquids have been around for quite some time and have seen many applications during the development of rocketry. However, they have never been used before in the quantities required in an ICBM. Others are relatively new, and quite a few are still in the synthesis or early pilot plant production phase. The medical aspects become obvious in the synthesis phase if the material is markedly toxic, but they almost invariably present themselves in pilot plant operations where the first human exposures occur. The drive for higher energy content is manifesting itself in higher reactivity with other materials and with the biological system. Consequently, the trend toward increasing toxicity will continue. Problems become magnified with full scale production and test firing operations; in an operational system, the confinement to an underground silo favors the persistence of toxic vapor levels. Also, large quantities must be moved across the country for delivery to testing and operational sites; this brings into focus the question of transportation accidents, and resulting large spills, in or near populated areas.

Obviously, the potential health hazard is real and of considerable magnitude. To prevent it is the job of engineering research programs in toxicology and allied medical disciplines.

The purpose of this paper is to provide a view of the medical aspects. But more than that, the author wants to illustrate the areas which must have a medical input. For the purpose of this illustration, specific propellants will be used to place problems in the proper perspective. The propellants listed in Table I are typical examples of high energy, storable fuels and oxidizers which are either in use or have a high use potential. The areas of medical interest and input are listed in Table II.

Table I
Typical High Energy Storable Propellants

Hydrazine
Unsymmetrical-dimethyl hydrazine (UDMH)
Aerozine-50 (50% mix of UDMH and hydrazine)
Pentaborane
Nitrogen tetroxide ($N_2O_4 = 2\ NO_2$)
Fluorine derivatives
"Exotic" liquids and solids

Table II
Over-All Medical Aspects

Toxicology
Tolerance criteria
Detection and measurement
Diagnosis
Therapy
Environmental Pollution
Site Selection
Toxic Exclusion Radii

Toxicity and Tolerance

The human tolerance limits are listed in Table III. For repeated daily 8-hour exposures, similar to industrial production situation, the values are those set by the American Conference of Governmental Industrial Hygienists. These are the so-called Threshold Limit Values (TLV). Emergency short exposure tolerances for 5, 15, 30, and 60 minute single exposures were suggested by the Committee on Toxicology of the National Research Council. These are tentative recommendations and are based on available human experience and animal exposure data. The experimental exposures of animals were performed by the Medical Research Laboratories at the Army Chemical Center on Air Force request and funding.

Table III
Human Tolerance Limits for Inhalation
(in parts per million)

Propellant	TLV (8 hr., repeated)	Emergency Single Tolerance			
		5 min.	15 min.	30 min.	60 min.
Nitrogen Tetroxide	5.0	35	25	20	10
Hydrazine	1.0				
UDMH	0.5	50	35	20	10
Pentaborane	0.005				

The need for such short tolerance criteria was created by the nature of research and development activities at test firing installations. The exposures occurring there are purely accidental and therefore are sporadic and of short duration, but to substantially higher concentrations than the TLV. There is a two-fold significance to these values: prognostic and psychologic.

There are no untoward physiological effects to be expected at these concentrations if the exposure times are not exceeded. Therefore, they eliminate the guesswork from estimating such tolerance and alleviate the fear of the unknown in the minds of both the exposed individual and management. Consequently, research and development schedules can be met with fewer delays caused by over-estimated health hazards. Further "fringe benefits" of emergency tolerance criteria are the simplification of stringent requirements placed on some detection and alarm systems, and eventually a compromise in toxic exclusion radii under situations where no other solution is available.

Table IV compares concentrations that did not cause any appreciable effect in animals with the suggested human tolerance levels, and leaves no doubt about latitude of safety margins.

Table IV
Acute Tolerance for Single Exposure
(in ppm.)

	Animal (Measured)				Human (Suggested)	
	No Death (rats)		No Pathology (dogs)		No Effect	
	5 min.	60 min.	5 min.	60 min.	5 min.	60 min.
UDMH	19,800	813	600	50	50	10
NO_2	190	72	104	28	35	10
Pentaborane	62	7.5	---	--	--	--

Detection Instrumentation

If monitoring and alarm instrumentation are to prevent serious exposures, they must observe human tolerance and, consequently, the development of such instrumentation requires medical consultation and guidance. Because of various modes of action among the propellants, there are no hard and fast rules. Since the correlation of exposure cases with the atmospheric concentration of propellant vapors is of prime importance, a wide range of detection is desirable. Ideally, this should cover a latitude of several decades of concentrations, beginning with the TLV level. Unfortunately, this is hardly possible without some switching arrangement if accuracy and linearity are to be maintained. Notoriously, detection instrumentation is always an area of compromise. To gain one aspect, it is necessary to sacrifice other desirable features. As a result, an instrument that is ideally suited for monitoring pilot-plant atmosphere could be almost worthless in a silo, and even more so in a field testing situation.

Reliability, of course, is a factor that is incompatible with over-sophistication; there is a need for simple, uncomplicated detection instrumentation, which does not depend on servo-loops and miniaturized back-up computers. Some of our present day systems are too delicate and capricious for missile site operation. It very well may be that semi-dry or dry systems will replace these in the long run. The most disgusted individual I have ever met was a project engineer carefully nursing along a monstrous detection device on the motor-pad, which routinely succeeded in postponing two out of three test firings because of minor malfunctions.

The spot-check type squeeze bulbs and other grab-sampling devices have, of course, proved their value in field surveys. In the hands of a qualified industrial hygienist, they are easily worth their weight in gold.

Diagnosis and Therapy

Usually, acute exposure cases do not present a diagnostic problem. If the history indicates malfunctioning equipment, leaky gaskets, etc., and the symptomatology is compatible, the pertinent question is the prognostic outlook. With the oxidizers pulmonary pathology is a universal feature and a chest plate in the proper time interval is of prime importance. As for the fuels, clinical laboratory tests have been devised for UDMH, hydrazine and pentaborane in the urine and can substantiate the diagnosis. Too much should not be expected from urine tests, however, and they should serve only as a rough gradation of the severity of exposure.

Chronic exposures are unlikely to occur in test-firing operations, but can be a common feature of propellant production activities. Pilot plant operations, especially, are notorious for producing this type of exposure. Full scale production facilities have been "de-bugged" to the point where leaks and drips are unusual, and most of them are open-air type facilities. In the evaluation of alleged chronic exposure cases, an active and aggressive industrial hygiene and safety program is a must. Atmospheric concentrations of propellant vapors in the general area and in the breathing zone of the worker must be documented with each job entailing cleaning of components and other close-quarter activities. If these levels correlate with the diagnosis and systemic effects, the presence of chronic intoxication is likely. Pulmonary function tests are of value with most oxidizers and diborane. Among the fuels, liver function tests are useful with hydrazine and nitrosodimethylamine, a precursor in the production of UDMH. Since pentaborane is remarkable for central nervous system effects, electroencephalograms can be useful. Finally, one must remember that these tests can be of decisive value only if pre-exposure baseline levels were established for each individual who risks exposure.

The treatment of acute intoxication is usually symptomatic and supportive. Specific treatment or antidotes are seldom available. Recently, pyridoxine hydrochloride was proved to counteract the convulsive and lethal effect of UDMH. Corticosteroids may be of value in the treatment of sequelae of NO_2 exposures.

Environmental Pollution

Some degree of air, water, and soil pollution is unavoidable when toxic propellants are used in multiton quantities. If not under control, toxic effects can occur in man, domestic and wild animal life, fish and game, plants and crops, and even in essential soil and water microorganisms.

The sources of this pollution are both the scheduled activities and the unexpected accidents, and these sources are either acute or cumulative in character. (Table V).

Table V
Sources of Environmental Pollution

Acute	Cumulative
Large spills	Venting
Test firings	Flare-off
Operational firings	Combustion products
Waste disposal	Decontamination procedures
Transportation accidents	Long-term operations

The chemicals that cause pollution are the propellants per se, their degradation and combustion products, reaction products with decontaminating agents and with the chemical constituents of the environment. Prediction of all reactions is impossible and must be determined at the activity. For this purpose, a mobile trailer laboratory was equipped and transported to a test firing site. It's furnished and advanced analytical instrumentation and manning are a joint Systems and Logistics Command effort. The mission of this trailer laboratory is to investigate the environmental pollution profile of each system using storable propellants and to identify those agents of pollution that are the most harmful and that can be used as a warning index of pollution severity.

Site Selection

One of the most frequent questions addressed to the Medical Department is in reference to the feasibility of toxic propellant operations at a certain specific site. Consequently, a number of important parameters must be considered (Table VI).

Since any large scale operation with these propellants necessarily entails a degree of hazard, any site selection amounts to taking a calculated risk. Because accidents are unpredictable, the basic approach must consider the most unfavorable weather condition at the time of a hypothetical accident and the maximum quantity of propellants to be involved in the operation. Pessimistic as it may sound, this must be the first approximation of the problem. All other factors can have a modifying, but not overruling, influence.

Table VI
Site Selection Criteria

Toxicity of propellant
Quantities (maximum)
Meteorology
Population density
Nature of operation
Scheduling and frequency
Safety record
Environmental pollution profile of propellants
Distances to communities
Future scale-up plans

Probably the most difficult decisions are those involving the selection of completely new sites. Obviously, today's real estate prices justify a great amount of deliberation and investigation of the hazard potential. The other cardinal point is familiarity with future trends in the propellant development and the likelihood of considerable scale-up of existing planning or the use of the same site with more toxic propellants, within a few years.

Toxic Exclusion Radii

In the process of toxic motor firings or in the event of a toxic spill, criteria for safe distances are essential for the protection of test site personnel and the neighborhood population. While it is true that motor firings can be scheduled for favorable conditions, in accelerated system programs some compromises will be made to meet milestone schedules. The remarks on accidental spills under the discussion of site selection pertain here, also. Table VII lists the considerations that must be made in the process of arriving at realistic exclusion radii. Again, the first approach must be to assume the worst weather conditions and a total spill. However, all the other factors can mitigate this estimate and contribute to substantial reduction of the safe distances. Good engineering design, underground containment or spontaneous ignition, realistic evaporation rates, vaporphase decontamination, and the magnitude of thermal rise can ameliorate a problem that seems insurmountable at the first glance.

The usual tool of calculations of concentrations versus distance is Sutton's equation or some modification thereof. In the past year, considerable field work was done on the experimental verification of this theory with storable propellants; this work has increased the confidence placed in such predictions. Thus, the outlook on this problem is much more optimistic today than a year ago, and opinions are voiced that sufficient turbulent dilution of toxic propellant vapors to avoid serious air pollution and toxic problems in adjacent communities will take place in a few miles' distance.

Table VII
Toxic Exclusion Radii

Maximum quantity
Evaporation rates of spills
Micrometeorology
Atmospheric dilution (Sutton's)
Spontaneous combustion
Thermal rise
Engineering design
Containment of spills
Vapor-phase decontamination
Speed of disposal or neutralization
Emergency short exposure tolerance

Summary

The medical aspects of large scale storable propellant operations are numerous and far reaching. This discussion was limited in scope to the toxic problems; other important areas, such as noise, vibration and blast aspects, have been omitted. Individual propellants were used for illustrative purposes only, without detailed discussion of the toxicological properties. An attempt was made to call the physician's attention to those areas which require his attendance and to those areas where medical input is not quite adequate at the present.

Because of the interdisciplinary aspects of toxic hazard control in large scale propellant operations, the medical man must be a member of a composite team consisting of a number of experts: propellant chemist, chemical engineer, industrial hygienist, sanitary engineer, safety director, rocket engineer, instrumentation specialist, toxicologist, micrometeorologist, and plant physiologist to mention a few. He must strive to be alert constantly to new situations and to preserve leadership when quantitation of human tolerance is required or a medical risk must be calculated. He is faced with the great challenge of the rapidly advancing missile technology.

* * * * * *

The 700,000 alcoholics who live in New York cost the taxpayers $50 million a year, estimated the State Co-ordinating Committee on Alcoholism. Alcoholics comprise 8 percent of the first admittances to State mental hospitals and 25 percent of relief cases, the report says, while 50 percent of the jail population is imprisoned for offenses related to alcohol. The report notes that New York's alcoholism is over the national average. About half of the State's alcoholics live in New York City.

(US DHEW PHS Public Health Reports 77(12): 1040, December 1962)

RESERVE SECTION

Capt Schenck Relieves Capt O'Brien as Director, Reserve Division, BuMed

Captain Kenneth W. Schenck MC USNR, assumed the duties of Director, Reserve Division, Bureau of Medicine and Surgery, relieving Captain Donald J. O'Brien MC USNR, who retired on 1 November 1962 after 20 years of dedicated service to the Medical Department of the Navy. Captain O'Brien served as Director, Reserve Division from 1955 and made contributions to the Naval Reserve which reflect honor upon him and which will continue to benefit the Navy for years to come.

Captain Schenck reported from the Naval Reserve Training Command, Omaha, Nebraska.

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Fourteenth Anniversary of Medical Company 12-6

September 24, 1962 marked the fourteenth anniversary of Naval Reserve Medical Company 12-6, Berkeley, Calif. Present at the regular drill that date were RAdm T. G. Hays MC USN, Twelfth Naval District Medical Officer and Commanding Officer, U. S. Naval Hospital, Oakland, Calif.; Captain O. B. Jensen MC USNR, Twelfth Naval District Medical Reserve Program Officer; and Mr. Alvin Langfield, Director of Alta Bates Community Hospital, Berkeley, Calif. Admiral Hays read and presented to Mr. Langfield, representing the Board of Trustees of Alta Bates Hospital, a letter of appreciation for the excellent cooperation the hospital has extended to Medical Company 12-6 in providing drill space for the past 14 years. The Commanding Officer of Naval Reserve Medical Company 12-6 is Captain W. P. Chesbro MC USNR.

* * * * * *

Promotion Policy Outlined for Reserve Officers (continued)

The date the President signs the board's report has, by an amendment to the law, become important to the individual officer. This date has a direct effect upon his pay and allowances in the higher grade. At one time, officers were entitled to the pay and allowances from their date of rank. Now, officers who are promoted are entitled to the pay and allowances of the higher grade from their date of rank provided they complete their professional qualifications within one year following the date the President approves the report. Otherwise,

they will be entitled to pay and allowances only from the date of appointment—that is, the date the Secretary of the Navy signs the appointment. Dates of rank, however, will not be affected, since they are controlled by law in accordance with the running mate principle.

Qualifying for Appointment

Although the date the President approves the report of a selection board affects pay and allowances, it has no bearing on the SecNav requirement that officers must qualify professionally—by earning an average of 24 promotion points for each year in grade, up to a maximum of 144—within one fiscal year following the fiscal year in which selected.

If officers do not qualify within one year, they are considered not professionally qualified and their selection is in jeopardy. (This "one fiscal year requirement" applies only to officers selected in Fiscal Year 1962 and thereafter.)

To establish his professional qualifications, an officer must have credited to his record (maintained by RORA in Omaha) the required promotion points before the terminal date for establishing his qualifications. In this regard, the date of application for credit for college or residency training is important. If an officer on a promotion list requests such credit after the terminal date—even though the training is creditable—he has failed to "establish" his professional qualifications as prescribed. Therefore, all officers taking part in college or residency training should request credit for this training as soon as they satisfactorily complete 12 semester hours. (Twelve promotion points are the maximum allowable for this training in any one year.)

Appointment

When an officer has fulfilled the professional and physical requirements, he must address a letter to the Chief of Naval Personnel via the command that maintains his record and RORA, requesting that an appointment to the next higher grade be issued him. The officer must include the dates on which he qualified professionally and physically in the official letter of request.

During the period when the officer is qualifying for promotion, BuPers is constantly checking to determine whether a vacancy has been established for the selectee's running mate. When the selectee's running mate "makes his number," the Reservist may be appointed, if qualified, to the next higher grade, and he will receive the same date of rank. In no case will a Reservist be appointed to the next higher grade until a vacancy has been established for his running mate. In some instances, therefore, it is necessary for an officer, who has actively taken part in the Reserve program and who is fully qualified for promotion, to wait several months after originating his request for appointment before he can be promoted. All appointments are issued for temporary promotion, and a permanent commission is issued only when the Reservist's running mate is eligible for a permanent commission.

(to be continued)

Convening Dates And Promotion Zones Of Fiscal Year 1963 Selection Boards

Tentative convening dates:	For promotion to—					
	RADM	CAPT	CDR	LCDR	LT	WO
LINE	3 Jan 63	8 Jan 63	15 Jan 63	5 Mar 63	9 Apr 63	19 Mar 63
STAFF	3 Jan 63	26 Feb 63	26 Feb 63	23 Apr 63	23 Apr 63	

Promotion Zones

Lineal number of the junior officer in the zone is shown; the junior officer and those officers senior to him are in the "promotion zone" for Fiscal Year 1963.

Promotion to RADM		Promotion to CAPT		Promotion to CDR		Promotion to LCDR	
Line	000088	Line	005304	Line	012351	Line	020475
21XX	No board authorized.	21XX	000330	Line (W)	000331	Line (W)	000437
22XX	No board authorized.	22XX	000403	21XX	000610	21XX	001695
23XX	No board authorized.	23XX	000049	22XX	000392	21XX (W)	000001
31XX	No board authorized.	31XX	000356	23XX	000144	22XX	001067
41XX	No board authorized.	41XX	000109	31XX	000855	23XX	000131
51XX	000006	51XX	000259	41XX	000186	31XX	001670
				51XX	000543	31XX (W)	000050
						41XX	000260
						51XX	000781

The promotion zone for promotion to the grade of lieutenant will include all lieutenants (junior grade) with date of rank of 1 Jun 1961 and senior.

The Naval Reservist
NAVPERS 15653, December 1962